OTP AUG 0 7 2003

SEQUENCE LISTING

1

110> KAKEFUDA, GENICHI KOOP, HANS-ULRICH STURNER, STEPHEN ZHEN, RUI-GUANG 120> CYANOBACTERIAL NU

<120> CYANOBACTERIAL NUCLEIC ACID FRAGMENTS ENCODING PROTEINS USEFUL FOR CONTROLLING PLANT TRAITS VIA NUCLEAR OR PLASTOME TRANSFORMATION

<130> BASF 100,100 PRV

<140> 09/893,033

<141> 2001-06-27

<150> 60/214,705

<151> 2000-06-27

<160> 19

<170> PatentIn Ver. 2.1

<210> 1

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 1

cgaattccct ggtagcattt aatacaaatt ggc

33

<210> 2

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 2

cgcataagct ttgcagatgg agacggtttg ggc

33

<210> 3

<211> 1735

<212> DNA

<213> Synechocystis sp.

<400> 3

coctggtage atttaataca aattggetat ettggeaaag teeceegaaa tattaegaaa 60 egtaaagtat aataacaate aacetgtaaa eeceaaatge ettagegaga eagtaaecea 120 tgegegttgt gategeegga geeggattag eeggeetage etgtgeeaaa taettageeg 180 atgegggett taeceeegte gtettggaae gtagggatgt attaggeggg aagategeeg 240 egtggaaaga tgaggaegga gattggtaeg aaaceggeet acacattttt tttggggeet 300

```
atcccaacat gttgcagtta tttaaggaat tggatatcga agatcgtctg caatggaaag 360
agcacagcat gatetteaac caaccagaga aaccaggtac etactetegg ttegatttte 420
cggatattcc ggccccatc aatggtttgg tagccattct tcgcaacaac gatatgctta 480
cctggccgga gaaaattcgc tttggcttgg gactcttgcc ggccattgtc cagggccaga 540
gctatgtgga agaaatggat aaatacactt ggtcagagtg gatggccaaa caaaatattc 600
cccccgcat cgaaaaagaa gttttcattg ccatgagtaa gacgttgaac tttattgatc 660
ccqatqaaat ttccqccacc attttactta ctqccctcaa tcgcttttta caggaaaaaa 720
atgqctctaa qatqqcattc ctqqatqqqq caccaccqqa qcqtctttgc caacctttgq 780
tcgactatat tacggaacgg ggaggggaag tacacattaa taaacctctc aaagaaattt 840
tgcttaatga agatggttcc gttaagggtt acttaatccg gggcctagat ggagcccccg 900
acquaqtqat cacaqcggat ttatatgtgt ctgccatgcc ggtggatccc ctgaaaacca 960
tggtgccagc gccctggaga gaatatcctg agtttaagca aatccaaggt ttggaaggag 1020
teceggteat taaceteeae etgtggtttg accgtaagtt aaccgacatt gateatttgt 1080
tattctcccg atcgccgttg ttgagtgttt acgccgacat gagcaacacc tgccgagaat 1140
acagtgatcc agacaaatcc atgttggaat tggtgctggc tccggcccag gattggatcg 1200
gcaaatccga cgaagagatt gtggcggcca ccatggcgga gatcaagcaa ctctttcccc 1260
aacacttcaa cggggataat ccagcccgac tgcttaaatc ccacgtggtc aaaacccccc 1320
gctcagtcta caaagctacc cccggaaggc aggcttgtcg ccccgatcaa cggacatcgg 1380
tgcccaactt ttacctagca ggggacttca ccatgcaaaa atacttgggc agtatggaag 1440
gggcggtgct ttccggcaaa caatgcgccc aggcgatcgc cgccgatttc aacccccaaa 1500
ccgttccccc caccagggaa atagtcaccg tgggttaagc cgcctggact ccctggtaat 1560
cttcctgaca aatggcaacc ctaatgcgac aatgctaaat ggctaacggt caaatttctc 1620
cccaqcqtgc agttaccaaa ccccaatcet ggtggctgac ttccgaaccc cgtccgtcct 1680
taatqttaca actqcccaaa ccgtctccat ctgcaaagcc ctgtgcttct gttga
<210> 4
<211> 20
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Primer
<220>
<221> modified base
<222> (3)
<223> a, g, c or t
<220>
<221> modified base
<222> (6)
<223> a, g, c or t
<220>
<221> modified base
<222> (12)
<223> a, g, c or t
<400> 4
                                                                   20
ggnacngayg cnttycarga
<210> 5
<211> 18
<212> DNA
```

<213> Artificial Sequence

```
<220>
<223> Description of Artificial Sequence: Primer
<220>
<221> modified base
<222> (10)
<223> a, g, c or t
<220>
<221> modified_base
<222> (13)
<223> a, g, c or t
<400> 5
                                                                   18
ytsccaytgn cknaccat
<210> 6
<211> 1959
<212> DNA
<213> Synechocystis sp.
<220>
<221> modified_base
<222> (1843)
<223> a, t, c, g, other or unknown
<400> 6
gccataggag cccatcgccg attgagttca aattagaagc acttagccta cgcttcctaa 60
accgattgtc cagtggttgc atcaattcct aatcccaaaa caaatttcct gaaaactgtt 120
cctagccaac ggcaaaccgg ggcttatatc ctgatggata gcctgaaacg ccatggggtc 180
aaacacattt ttggctatcc cggcggggca attttgccca tctatgatga actgtaccgc 240
tttgaagegg egggggaaat tgageatatt ttggtgegee atgaacaagg agetteecat 300
gcggcggatg ggtatgccag agccacaggt aaagtgggag tttgtttcgg tacatctgga 360
ccaggggega ctaacttggt gaceggeatt gccaatgccc atttggactc ggtgcccatg 420
gtggtgatta ctggagaggt gggccgtgcc atgattggta gcgatgcttt ccaggaaatt 480
qacatttttq qcatcacctt accqatcqtt aaqcactcct atqtqqtacq taqtqcqgcq 540
gatatggete geattgttae tgaggettte catettgeta geaceggteg teeegggeeg 600
gttttgatcg atattcccaa ggatgtgggc ttagaagaat gtgagtacat tcccctcgac 660
cccggtgacg ttaatctacc gggttatcgc cccacggtta aaggtaatcc ccgacaaatt 720
aatgcggcat tgcaattgtt ggagcaggcc agaaatccct tgctctacgt agggggaggg 780
gcgatcgccg ccaatgccca tgcccaggtg caggaatttg cggaaaggtt ccagttgccg 840
gtaacaacca ccctgatggg aattggggct tttgacgaaa accatcccct ttcggtgggt 900
atgttgggta tgcatggcca ccgctatgcc aactttgccg tcagcgaatg tgatttgttg 960
attgcagtgg gggcccgttt cgacgaccgg gtaactggca aactagacga atttgctagc 1020
cgcgccaaag taattcacat tgacatcgac ccggcggagg tgggaaaaaa cagggctccc 1080
gatgtgccca ttgtggggga tgtacgccat gttttagaac agcttttgca gcgggcccgg 1140
gaattggatt accccaccca tccccatacc acccaggcat ggttaaatcg cattgatcat 1200
tggcggaccg attaccccct ccaggtgccc cactatgagg atactattgc cccccaggag 1260
gtagtacacg aaattggtcg ccaggccccc gatgcctact acaccaccga tgtgggacaa 1320
caccaaatgt gggcggccca gtttttgaac aatggccccc gccgatggat ttccagtgct 1380
ggcttgggta cgatgggctt tggtttacct gccgccatgg gagccaaagt gggagtgggg 1440
gacgagcggt catttgcatc agtggagatg ccagcttcca aatgaatctt caggaactgg 1500
gaaccctagc ccagtacgac atccaggtta aaactattat tctcaataac ggttggcagg 1560
ggatggtgcg tcagtggcaa caaactttct acgaagaacg ttattctgct tctaacatgt 1620
cccagggcat gccagacatt aatctcctct gtgaagccta tggcatcaag ggtattactg 1680
tgcgcaagcg ggaagatttg gccccggcga tcgccgaaat gctagcccac aatggtcctg 1740
tggtgatgga tgtggtggtc aaaaaagatg aaaactgtta ccctatgatt gcccccggca 1800
```

tgagtaatgc ccaaatgcta ggtttaccgg aagtgccggt acnggacaat ggtccccgga 1860

tggtggagtg caaccattgc caaacccaaa atttcatcac ccatcgtttc tgttctggtt 1920 gtggagccaa actctaaccc ataagccaaa attgaattc <210> 7 <211> 18 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence: Primer <400> 7 18 attgacattt ttggcatc <210> 8 <211> 19 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence: Primer <400> 8 19 tatccgccgc actacgtac <210> 9 <211> 22 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence: Primer <400> 9 22 caggggcgac taacttggtg ac <210> 10 <211> 22 <212> DNA <213> Artificial Sequence <223> Description of Artificial Sequence: Primer <400> 10 22 accgctatgc caactttgcc gt <210> 11 <211> 22 <212> DNA <213> Artificial Sequence

```
<220>
<223> Description of Artificial Sequence: Primer
<400> 11
                                                                    22
ggaggatagt acacgaaatt gg
<210> 12
<211> 22
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Primer
<400> 12
                                                                    22
aaatcttccc gcttgcgcac ag
<210> 13
<211> 23
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Primer
<400> 13
                                                                    23
ccaatttcgt gtactacctc ctg
<210> 14
<211> 21
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Primer
<400> 14
aaagtgggag tgggggacga a
                                                                    21
<210> 15
<211> 22
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Primer
<400> 15
                                                                    22
cggtggaatt ttaccccaat gg
<210> 16
<211> 23
```

```
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Primer
<400> 16
                                                                   23
ggccctaaaa cttggattcc agg
<210> 17
<211> 565
<212> DNA
<213> Synechocystis sp.
<400> 17
gtggaatttt accccaatgg ccaccggcga tcgccttctt tgccccccat gaaacacacc 60
ctctctgttt tagttgaaga tgaagccgga gtgctaaccc gcattgccgg actatttgcc 120
cgccgtggtt ttaacattga gagcttggcg gtggggtcgg cggaacaggg ggacgtttcc 180
cgcatcacca tggtggtgcc gggggatgag aacaccatcg aacaactgac caagcaactc 240
tacaagttgg ttaacgtaat taaagtacag gacatcaccg aaactccctg tgtggaaagg 300
gaattgatgc tggtgaaggt gagcgccaat gcccctaacc gagcggaagt gattgagcta 360
gcccaggtat tccgggcccg cattgtggat atctccgaag acaccgtcac catcgaatgg 420
tgggggaccc gggtaaaatg gtagcaatcc tccagatgtt ggccaagttg gcattaaaga 480
ggtggctcga acgggcaaaa ttgctttggt gcgggaatcc ggcgtcaata cggaatatct 540
qaaatccctq qaatccaagt tttag
<210> 18
<211> 25
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Primer
<400> 18
ggctgatatc ctgatggata gcctg
                                                                   25
<210> 19
<211> 30
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Primer
<400> 19
ttggcttacc ggttagagtt tggctccaca
                                                                   30
```